Analysis of American Passenger Rail: Expansion into Rural Georgia

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Abstract

This paper analyzes American passenger rail's historical and social impacts to highlight a solution to lacking connectivity and transportation options for rural Georgians. Rural Georgians need a lasting and adequate solution to the issue of lacking access to jobs, healthcare, and neighboring areas. Supplemented by van services that ineffectively address the core issue of an inexisting reliable transportation system, the creation of a passenger rail line utilizing existing freight tracks along the Atlanta, Macon, Savannah route would encompass and serve the surrounding rural communities. Analyzing the specific actions for federal, state, and municipal governments to take, there is data supporting the substantial benefits passenger rail can have on the rural areas as well as urban areas by decreasing commuting traffic in urban centers.

Analysis of American Passenger Rail: Expansion into Rural Georgia

The role of rail in American history has transformed the places people have settled, job accessibility, and has unlocked previously unattainable opportunities. Having the largest freight rail network in the world, American passenger rail remains disproportionately underdeveloped despite the immense benefits it creates. Currently, the United States has 140,000 miles of railroad track that provides untapped opportunities to expand dual-use tracks to both areas with booming city-centers and those that are vastly rural. The historical and social impacts of passenger rail studied in America highlight a solution to lacking transportation options for rural Georgians. Applying the same success observed in dual-use route lines across the U.S. to Georgia would assist in mobility, job acquisition, and aid in relieving traffic congestion. The existing Norfolk Southern freight route between Atlanta, Macon, and Savannah serves as a promising option to address the issues stemming from the lack of public transportation in rural Georgia.

The Historical Impacts of Passenger Rail in America

The 20th century saw the decline of passenger rail extending through WWII until the 1960s. Among many causes, the primary reason cited for the immense decrease in the number of cars running and passenger volume was the degree of financial loss and the detrimental effects on the passenger service. American Track (Amtrak) emerged from the decline, a corporation designed to revitalize passenger rail into the 21st century despite the many issues incurred from creation.

The degree of governmental support of the passenger rail system declined with the rise in technological advancement lending public subsidies to other transportation modes such as aviation and automobiles. When first established, the rail system received substantial

contributions such as loan guarantees, cash payments, and land grants. To repay the government, the rail industry had to offer services such as shipping goods. The government did not require this transaction for rail funding for funding highway programs. The belief that rail does not produce as many benefits as highways caused an initial financing change. “The technological expansion displayed that improvements in automobiles and highway engineering made cars seem more convenient and improvements in aircraft and flight control systems gave planes a speed advantage over trains for long-distance trips giving customers a better value to not travel by rail” (Nice, 1998). This imbalance of government subsidies set the decline of passenger rail in motion and has continued into the 21st century. The glamorous transit system began with elaborate dining, tavern, and sleeper cars, but the loss of financial support dramatically degraded the experience. The amenities previously used to draw in customers declined in execution as other modes of travel gained support. Passenger rail in the 1950s was to be slow, kept too cold or too hot, with inconvenient ticketing and rude service (Nice, 1998). As a result, the passenger rail industry lost even more funding and could not meet the public’s quality expectations, thus accelerating the move towards transportation alternatives. In a national response to the failing system, employees, citizens, and government officials pushed for action, the Nixon administration answered with the creation of RailPax.

The Rise and Decline of Amtrak

Under company executive orders, many rail companies suffered after acting in ways to discourage riders in hopes of minimizing losses. After numerous railroads filed for or were on the brink of bankruptcy, Nixon signed the “Rail Passenger Administration Act of 1970” creating

a way for passenger rail to continue to exist at a lower cost than a direct subsidy program. Under the RPAA:

> The corporation (RailPax) pays the railroads to run their passenger trains and compensates them for certain facilities, including tracks and terminals. It bears all administrative costs, such as those incurred for the purchase of new equipment, and manages scheduling, route planning, and the sale of tickets. (The Editors of Encyclopedia Britannica, 2015)

Companies with long-distance rail routes were eligible to join RailPax, allowing them to be free of future passenger rail-related losses and previous obligations restricting them from abandoning unprofitable routes. The cost and terms of admission were to "allow RailPax to operate wherever it wishes, grant RailPax trains preference over their freight trains, and allow the ICC to determine compensation for operations if they could not reach an agreement with RailPax" (Amtrak, 2003). Only three companies continued to operate under obligation to continue passenger service independently. They continued to incur losses until one went bankrupt and the other accepted terms to be absorbed into RailPax. RailPax was created to solve failing rail operations and preserve passenger rail by operating the most needed rail routes as a collective with public funding and a pool of resources and equipment from the previously independent companies. RailPax absorbed a total of 21 routes spanning across 43 states into a single quasi-public entity. Disagreements arose when planning the future of RailPax to either be used as a way to slowly eliminate the remaining passenger rail or serve as a way to continue connectivity across the nation with the ability to support unprofitable but essential routes. The support to

maintain nationwide service allowed the system to receive substantial funding to revive passenger service and give it a chance for success.

After changing to The National Railroad Passenger Corporation (Amtrak), today's system has faced a time of triumph and economic hardship in the 21st century. "Amtrak operates 44 routes on 21,000 miles of track in 46 states. Of this network, freight rail companies own almost 95 percent of the track, and Amtrak owns all the trains" (Edwards, 2016). Due to inheriting several unique operating systems of independent rail companies, challenges such as booking difficulties, track compatibility, and quality arose, creating Amtrak's initial struggles. Amtrak began with no tracks of its own and had the task of reversing the decline of passenger rail in American using only poorly maintained tracks. Before gaining credibility as a promising and reliable transportation mode, Amtrak had to reconfigure station locations, manage and retire the aging car fleet, and modernize the technology used to ensure punctuality and comfort. In an attempt to streamline the process, "Congress provided Amtrak with an initial grant of $40 million and authorized an additional $100 million in government-guaranteed loans. Amtrak received hundreds of millions of dollars in federal funds annually to cover operating losses throughout the remainder of the 20th century" (The Editors of Encyclopedia Britannica, 2015). Amtrak's survival depended on transforming the public perception of passenger rail to attract passengers and show progress with the direct government financial assistance. Without ridership, revenue and a loss of essential political support would be absent. Created out of necessity, the foundational elements that built Amtrak garnered the ability to control the situation. The Nixon Administration hoped that the quasi-public corporation approach would provide considerable presidential control over the system, and Congress members believed the same, wanting

Congress to have leverage in the decisions of passenger rail's future (Nice, 1998). The immense presence of government dependence has allowed politics to play a significant role concerning funding for capital investments, operating costs, and debt service. From 1980-1994, operating revenues grew by almost 229%, reflecting successful improvements to making independent routes a cohesive and dependable system. Despite the system's turnaround success, the operating expenses needed to facilitate this success continue to outweigh the revenue brought in. The government created Amtrak under the assumption that after its initial investment the corporation would become self-supporting over time. However, it has never earned a profit. Amtrak has consumed over $40 billion in federal subsidies throughout the decades. "In 2014, it had revenues of $3.2 billion and expenses of $4.3 billion, and it received direct federal subsidies of $1.5 billion" (Ernst & Young LLP, 2015). Today, many sources criticize the Amtrak system for delays, pricing, speed, and dependence on government subsidies to stay afloat. Despite these criticisms, it is essential to note that Amtrak has steadily increased revenues, ridership, and operating performance throughout the past decade. According to Amtrak's (2018) fiscal year performance, "Strong management and improved product delivery and customer service led the company to its best operating performance in company history." Operating earnings improved 13.3 percent from FY 2017 from $168.0 million to $193.7 million, total revenue increased 2.2 percent totaling $3.38 billion, and ridership totaled 31.7 million trips with steady yearly growth.

Critical Transportation-Related Issues in Rural Georgia

Georgia's highly developed rail network is the largest in the southeast due to its freight, commuter, and passenger rail lines covering over 5,000 totaled route miles. Georgia is also home to the fastest growing and largest single-operating port in Savannah. "A study recently released

by the University of Georgia found that maritime trade accounts for $44 billion of the state's gross domestic product and the ports directly or indirectly touch more than 439,000 jobs- mainly centered in Atlanta" (Trubey, 2018). With such an extensive amount of freight traffic, the majority is carried to and from the port by rail and truck. The rail system holds 28 percent of outbound freight, 23 percent of inbound freight, 3 percent of intrastate freight, and 15 percent of all freight in the state (BTS, 2017). Atlanta, Macon, and Savannah tie Georgia's rail system to the port and shipping industries. Most cities along this essential freight route are rural and lack public transportation. In turn, this issue causes a large majority of rural Georgians to commute to urban areas independently. The mass amount of commuters illustrates how the lack of public transit directly affects where and how people can travel. By utilizing the existing freight route for passenger rail, Georgia could give many people the ability to have functional and dependable transit. Additionally, residents would be able to access other cities, opportunities, and comprehensive healthcare options. A passenger rail route would also promote inward investments in rural areas and bring economic development alongside the infrastructure.

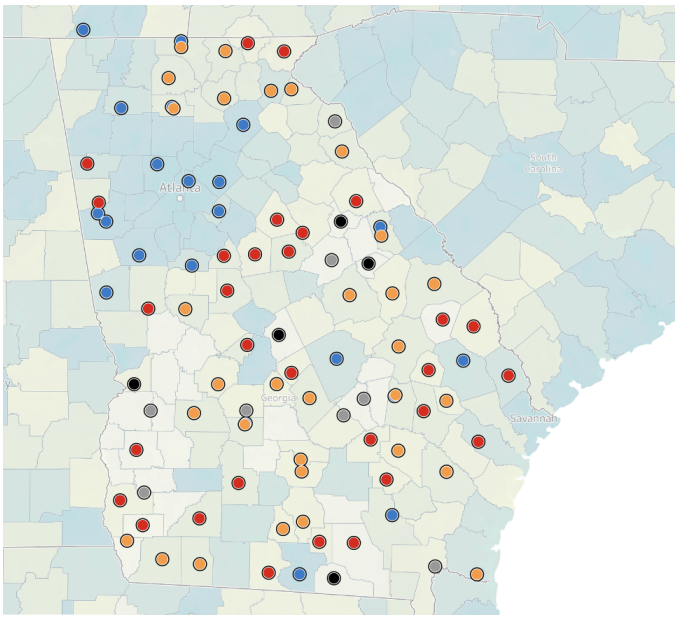
The Health of Rural Communities

The current climate surrounding COVID-19 has raised concerns surrounding the accessibility of medical resources for rural Georgians. Areas that have previously suffered under the circumstances of closing rural hospitals and decreased funding for transportation and medical services are now, more than ever, vulnerable to address the people's medical needs. Public transportation is a crucial aspect to improve the quality of life for the region, increasing accessibility to jobs, medical care, and tourism. Of The Georgia Alliance of Community Hospitals network of facilities meant to serve the state's most vulnerable populations, thirty-six

of these hospitals are in rural areas. Before the spread of COVID-19, twenty-seven of them were considered “at-risk” (Bethea, 2020). Thirty of the hospitals in rural Georgia are critical access hospitals. Under this classification, the hospitals are more than 35 miles away from the nearest hospital and cannot have more than 25 inpatient beds (CMS, 2019). Equally concerning is the fact that five rural counties have no EMS services at all. Many rural hospitals face the problem at an accelerated rate, building concern for the crippling healthcare system.

Figure 1

Map of Rural Hospital Services



Note: The data presented on the map reflects the counties with 35,000 people or less. The Atlanta Journal-Constitution analyzed the most recent five years’ worth of hospital financial data from Georgia’s remaining sixty-one hospitals (2020).

* The key for identified hospitals are as follows: critical access- red, rural general hospital- orange, air ambulance- blue, closed hospital- grey, no EMS in the county- black.

Seasonal flu data has shown the effects of having a more impoverished, aging, and farther located population from healthcare resulting in more deaths than seen in urban centers such as metro Atlanta (Joyner & Perry, 2020). Data from the Centers for Disease Control and Prevention found rural counties had a death rate of more than two and a half times that of the state's large metro counties (Wickersham, 2014). Beyond the issue of limited resources, medical staff, and facilities is the lack of internet connection. Many physicians have transitioned nationwide to a telehealth platform consisting of high-speed video conferencing for health services during COVID-19. Many rural Georgians lack a high-speed internet connection or even a device to use.

The issue of transportation arises when residents deal with illnesses that need attention and resources not found in the limitedly funded hospitals. As numerous rural hospitals have closed in the past decade with more planned to follow, it is expected that A growing number of rural residents will forgo vital health care. When close hospitals become unavailable, more considerable health disparities between rural and urban Georgians emerge. "When compared with urban populations, rural communities experience higher death rates from heart disease, cancer, unintentional injury, chronic lower respiratory disease, and stroke" (NCSL, 2018). With many illnesses needing constant doctor visits, dialysis, chemotherapy, and other treatments, the inaccessibility to these resources and continuous transportation modes to outside medical centers. Rural hospitals that become overwhelmed with patients typically divert them to urban areas (Paschal, 2020). With scant transportation options and limited access to comprehensive health care services in their community, the ability to travel outside of their community to seek care has proven to be an increasingly critical issue. The combined problem of lacking public

transportation and limited healthcare funding and services has come together during the pandemic to expose Georgia to rural areas' existing issues.

Georgia Rural-Urban Commuting

When looking at the national average of miles traveled per day (29.2 miles) compared to a rural county such as Dodge County, Georgia (67 miles), is more than double (WIN Network, 2018), exemplifying the high concentration of commuters in rural areas commuting to urban areas. This inefficient and time-consuming passage shows an increasing need for public transportation in rural Georgia. With a passenger rail route intercepting the urban areas many rural Georgians commute to, the system will lessen the distance commuters must travel. The United States Department of Agriculture's (USDA) Economic Research Service (ERS) established rural-urban commuting area codes (RUCA) using census data to better measure daily commuting, population density, and urbanization. The RUCA classification helps establish the most prominent patterns and directions of commuting. It separates the counties into metropolitan, micropolitan, small town, and rural commuting based on a one to ten scale.

Table 1

Rural-Urban Commuting Area Codes

RUCA Code	Classification	Description
1	Metropolitan area core	Primary flow within an urbanized area
2	Metropolitan area high commuting	Primary flow 30% or more to an urbanized area
3	Metropolitan area low commuting	Primary flow 10% to 30% to an urban area
4	Micropolitan* area core Primary flow within an Urban Cluster of 10,000 through 49,999	Primary flow within an Urban Cluster of 10,000 through 49,999
5	Micropolitan* high commuting	Primary flow 30% or more to a large urban cluster
6	Micropolitan* low commuting	primary flow 10% to 30% to a large urban cluster
7	Small town core	primary flow within an urban cluster of 2,500 through 9,999
8	Small town high commuting	Primary flow 30% or more to a small urban cluster
9	Small town low commuting	Primary flow 10% through 29% to a small urban cluster
10	Rural areas	Primary flow to a tract outside an urban area or urban cluster (including self)

Note: This table expresses the USDA ERS Rural-Urban Commuting Area codes (2019) by displaying the identifying code number followed by the classification name and description. Georgia's Rural and Urban areas are classified into identification codes. Codes 4-10 indicate rural areas in Georgia, and codes 1-3 indicate Georgia’s urban areas.

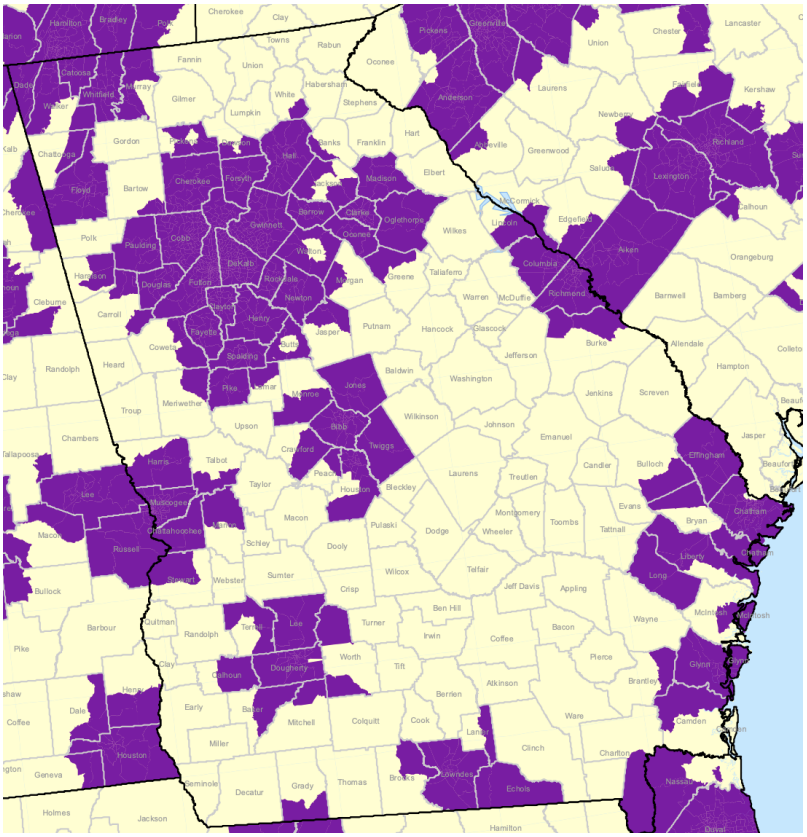
*Urbanized Area: Areas with 50,000 or more people

*Urban Cluster: Areas with at least 2,500 and less than 50,000 people.

*Micropolitan: Area with a population of at least 10,000 but less than 50,000.

Figure 2

Map of Georgia Rural-Urban Commuting Areas


Cherokee
Clay
Rabun
Towns
Union
Fannin
Gilmer
Lumpkin
White
Habersham
Stephens
Hart
Franklin
Oconee
Pickens
Greenville
Anderson
Laurens
Union
Chester
Lancaster
Kershaw
Richland
Lexington
Newberry
Greenwood
Saluda
Edgefield
Calhoun
Orangeburg
Aiken
Barnwell
Bamberg
Allendale
Hampton
Colleton
Jasper
Beaufort
Effingham
Chatham
Bryan
Liberty
Long
Wayne
McIntosh
Glynn
Camden
Charlton
Ware
Pierce
Brantley
Atkinson
Bacon
Coffee
Berrien
Cook
Lanier
Clinch
Echols
Lowndes
Brooks
Thomas
Grady
Decatur
Seminole
Miller
Early
Baker
Mitchell
Colquitt
Worth
Tift
Turner
Irwin
Ben Hill
Telfair
Wilcox
Crisp
Dooly
Sumter
Webster
Schley
Macon
Taylor
Houston
Peach
Crawford
Monroe
Jones
Bibb
Twiggs
Wilkinson
Baldwin
Washington
Johnson
Emanuel
Jefferson
Jenkins
Screven
Burke
Glascock
Hancock
Putnam
Greene
Taliaferro
Warren
McDuffie
Richmond
Columbia
Lincoln
Wilkes
Oglethorpe
Madison
Elbert
Franklin
Hart
Stephens
Habersham
White
Lumpkin
Union
Towns
Rabun

the counties including the cities of Atlanta, Savannah, and Macon, have distinct rural to urban commuting.

Lacked Public Transportation in Rural Georgia

Atlanta has The Metropolitan Atlanta Rapid Transit Authority (MARTA) bus and train routes, Macon has the Macon-Bibb Transit Authority (MTA) bus routes, and Savannah has the Chatham Area Transit (CAT) bus routes. All three cities are supplemented by inexpensive and consistent forms of public transportation. Along with these three more prominent cities, smaller cities of Columbus, Athens, Albany, Hinesville, Rome, and Augusta also have access to public transportation. Still, outside of these main city-centers, rural Georgia has a significant lack of a central transit system and access to rideshare. The issue of lacking a transit system becomes intertwined with the issue of additional transportation to and from existing transit systems. Implementing a central rail line in some areas can cause obstacles to arise when residents have no transportation mode to get to and from stations. Where MARTA users in Atlanta may use Uber or a public scooter, such as Bird, access to these supplemental options are limited for rural Georgians. Due to the large rideshare platforms allowing drivers to select areas to serve, many drivers exclude rural areas far from urban centers due to lack of frequent ridership, longer distances traveled, and less money made on rural rides. The need for rural public transportation is linked with providing mobility and accessibility to essential employment, goods, and services for older adults, persons with disabilities, low-income persons, and others (US Department of Transportation, 2019). Despite many rural areas in Georgia supplemented by the current sixty-five minor transit operations system for the 118 counties in rural Georgia, the need has exceeded its resources. Of the 159 counties in Georgia, 58 counties lack their own public

transportation system (APTA, 2019). Jackson County, Georgia, is one of the many rural areas utilizing on-call van services. Despite having a population of 72,977 residents (2019), there are only three vans with the capacity to hold ten people available. The service's inefficiency in providing reliable transportation stems from the inability to cater to people's immense need for transportation. The van services ineffectively address the core issue of a lacking consistent and dependable transportation system to function across Georgia's entire state.

As examined, a prevalent issue when analyzing solutions to the lacking transit in rural Georgia is certain areas' accessibility to preliminary local transit options. Without a dependable and frequent system to travel short intercity routes, certain areas could not reap the benefits of a central rail route due to the inability to travel to and from the station. It is advised for certain counties located around the rail route to implement additional systems to supplement passenger rail. Having both a higher poverty and unemployment rate in rural Georgia when compared to urban areas, the lack of dependable transportation causes rural working residents to struggle to locate opportunities and causes many, as displayed in Figure 1, to commute large distances as means of getting to work.

Implications of Passenger Rail

The absence of public transit in rural Georgia causes residents to face an inequality of access to medical services, jobs, and mobility. With the creation of A central passenger line, Georgia's connectivity will be elevated, facilitating mobility between regions of the state without the use of personal vehicles opening up opportunities for rural residents.

Enhanced Connectivity

Connectivity is a central idea and goal for effective transportation planning. Forty-six percent of Georgia's population is concentrated in rural areas. With a significant disparity of accessibility to public transportation in rural areas, it has affected the state's connectivity collectively. The primary groups affected by the lack of public transportation in rural areas are identified as seniors, workers (currently employed or looking for work), and people needing regular or irregular health care. These groups have spoken out needing a more reliable and broader form of transit when discussing the current on-call services. "Better transportation options are necessary for people who cannot drive, do not own cars, or must travel for work or healthcare where congestion makes driving difficult or unpredictable" (Homa & Shoup, 2010). Many rural areas nationwide are heavily affected by residents moving to urban areas seeking education or career opportunities to avoid the long commutes many must make due to the inexistence of other options in many rural areas nationwide. In Atlanta, Macon, and Savannah, there are collectively seventy-five colleges out of the 178 colleges in Georgia. The declining economic activity and inability to keep residents in the rural communities opens up a need for travel between urban and rural cities. Inter-city passenger rail allows connectivity between cities while increasing healthcare access, economic competition, and labor market performance. Rural communities concerned with preserving residents' access to employment and educational opportunities have the opportunity to grow quickly with the increase of passenger rail commuting activity.

Facilitated Inward Investments

While creating the infrastructure for passenger rail can be costly, the investment return is immense when looking at jobs created, jobs made accessible for commuting, and the increased value of the cities included. Comparably, the infrastructure costs of developing an entirely new line with tracks are more expensive than utilizing existing freight tracks. According to the American Public Transportation Association (APTA), for every one billion dollars invested in rail 20,000 new jobs are created. Implementing a high-speed and intercity rail network could create as many as 1.6 million construction and manufacturing jobs (2015). Aside from construction and manufacturing jobs, "Passenger rail also supports commercial activity by bringing visitors into proximity to shopping, retail, tourism, and other destinations, thereby increasing business activity and tax revenues" (Litman, 2015).

Furthermore, passenger rail provides improved mobility for non-drivers, increased connectivity, and improved public health. A significant issue rural areas face is the loss of workers and residents unable to live and commute to work in rural areas. The option of being able to live in lower-priced rural areas while utilizing passenger rail to work has shown to not only keep but also increase residents. With developments in transportation infrastructure comes the reorganization and distribution of employment opportunities. This response helps both employees and employers open businesses to larger markets and skilled labor availability (Knowels 2016). The investment in cities along the route also increases land, commercial, and residential property values. Although value increases differ based on location and pre-existing infrastructure conditions, some have seen in many cities such as Portland, Oregon there is value in transportation access. There have been more significant impacts on commercial properties in

some cities where access to transportation draws companies interested in easy commuting. Passenger railway attracts investment in housing, retail, education in addition to creating thousands of jobs (Guangqing Chi, 2016). As passenger rail unlocks previously unattainable jobs, there are also jobs created from the project itself. The Hiawatha Amtrak line, established in 1971 in Minneapolis, Minnesota, led to 1216 low-wage jobs, 833 medium-wage jobs, and 5075 high-wage jobs (Knowels, 2016). Developments in transportation infrastructure have also shown to make a significant change in integrating smaller rural areas into the regional economy. When one area of the state benefits and grows economically, other state areas share the success.

Funding Analysis

In the creation of such a reliable and high-speed transportation infrastructure to encompass such a large area of the state, high costs accompany the construction. Conclusions can be drawn after analyzing and comparing three main types of funding used in established American passenger rail companies to better understand the best channel to pursue in Georgia. Differing on the primary sources of investment and funding, there are significant advantages and disadvantages seen over time by the rail companies characterized as privately funded, publicly funded, and a combination of both.

Privately Funded

The classification of "privately funded" applies when private financing and investors putting their capital at risk is the sole funding of a project. Privately funded projects can utilize the federal loan programs designed to increase and promote private infrastructure developments, such as The Transportation Infrastructure Finance and Innovation Act (TIFIA) and Railroad Rehabilitation and Improvement Financing (RRIF) programs. The Texas Central Rail project is a

current and unprecedented plan to use private capital to fund a solution to a large number of weekly commuters between Houston and Dallas. It is projected that the route will accomplish its goal of becoming the fastest passenger rail line in America using Japan's Shinkansen technology, reaching speeds of over 200 miles per hour with departures every thirty minutes of peak commuting times (Texas Central, 2019). There are significant advantages to privately funded infrastructure projects. As seen in Texas, the project can address the lack of infrastructure and funding for the planned transportation by pooling investors motivated to alleviate the issue. A prime reason for private financing is the ability to avoid bureaucratic requirements for receiving government funding. These politically motivated requirements can add unnecessary costs and create requests that could compromise the route's success. These issues were displayed to all of America during the funding and construction periods of the California high-speed passenger rail line that has since been halted. Alterations to the initial route proposal to receive public funding came with many politically based requirements like including the locations of Central Valley, San Jose, and a detour to Palmdale rather than directly reaching LA. Projected to slow the route, these additions were made for elected officials to get a "win" for their area. "The Palmdale route made the north-south trip 12 minutes slower while costing $5 billion in extra spending" (Yglesias, 2019).

Publicly funded

A successful example of a publicly funded route is the Northstar Line, a commuter rail route in Minnesota. The Northstar line runs on the existing track and right-of-way owned by the BNSF Railway. Opened in 2009 and funded by the federal, state, and regional rail authorities of the counties serviced, the line cost $320 million. The investment was primarily used for new

stations, safety additions, and signal updates because almost all the route already existed from the freight company. “In 2018, Northstar logged more than 787,000 rides, lowering congestion on highly traveled roadways, such as Hwy. 10 and I-94” (Metropolitan council, N.d.). In a situation requiring fewer public funds than the California project, projected to cost $63.2-$98.1 billion, public funding can successfully finance the project as the money has clear and limited boundaries and does not require extensive track infrastructure construction. Another publicly funded example is The Virginia Railway Express (VRE). The VRE is an efficient commuter rail service that connects the outer suburbs of Northern Virginia to Union Station in Washington, D.C. The railway is financed by a combination of federal, state, and regional funding and operates on Amtrak, Norfolk Southern, and CSX owned tracks. Bureaucratic elements that may affect the project’s integrity due to compliance measures required to guarantee awarded funding security typically harms privately funded operations. However, as seen in the Northstar line and the VRE, among many others, it is possible to come to an efficient and concise use of public funding yielding great results.

Combination of Private and Public Funds

Apart from public and private funding sources is a combination of both. The funding entity typically found in transportation projects is Public-Private Partnerships (PPP). PPP allows the completion of large-scale government projects such as a passenger rail line with private funding. “PPPs in railways can bring opportunities for investment, operating efficiency, and modern technology. PPP funding railway projects that share freight tracks may lead to efficiency gains and an increased revenue basis for states and private investors investing in PPP schemes more attractive” (World Bank, 2020). The government may provide funding for the project

through subsidies/grants, equity investment, and debt. These mechanisms can assist in the project's risk assessment, assuring the government bears more financial risk than the private enterprises involved. "The public and private parties share resources such as financing, labor, capital, and management. A PPP exists through an agreement where the skills of each sector are shared in delivering a service for the general public" (Investopedia, 2019). While there may be aspects of politically motivated actions, PPP allows for infrastructure developments to occur with a private entity's assistance. Combined funding incorporates the advantages of public and private funding into a single channel.

Findings

Implementing a passenger rail line utilizing the existing Norfolk Southern freight tracks from Atlanta to Macon to Savannah will collectively address the issues of lacking connectivity, feasible public transportation, and excessive commuting by rural Georgians. With this line, a revitalization of town, jobs, and the economy can occur. The urban cities of Atlanta, Macon, and Savannah are booming economic areas that serve as critical points to Georgia's shipping industry. The cities' success draws commuters from all state regions with a great deal of commuting from rural cities. The lack of public transportation directly impacts traffic congestion, healthcare access, and job and education accessibility. These three cities will serve as access points within the time-efficient and inexpensive rail line for surrounding rural areas. This proposed centrally located route can have an immense impact on the connectivity of rural and urban areas in Georgia while simultaneously solving access disparities and increasing economic development.

Recommendations

Georgia should consider pursuing a central passenger rail line extending from Atlanta to Savannah through Macon using the existing Norfolk Southern rail track. Currently, the Atlanta-Savannah rail connection is one of the most successful shorter-haul intermodal freight rail operations in the country, with cities separated by approximately 250 miles. Introducing the possibility of passenger rail alongside this freight success is determined by the selected corridor's population density and economic activity. The identified route based on rural-urban commuting patterns and the success of the selected cities' freight and port industries sufficiently address these concerns. If current trends continue, there will be consistent increases in highway congestion due to population growth, high economic activity, and a lack of public transportation available for the surrounding rural areas. The rail line would significantly elevate the state's connectivity and increase economic development in all areas affected.

A significant aspect of the investment into passenger rail comes from funding construction before the system can function and begin generating revenue in return. From the analysis of funding options for such a project, it can be determined projects consisting of a combination of federal funding and private capital succinctly address the concerns raised when devoting such large amounts of investment. Until revenue is generated, there is a high risk of unprofitability in the initial phases. The combined resources would raise the investment amount and create a level of financial security from the split costs.

Federal Role

To sufficiently accumulate such a massive amount of funding, the federal government needs to implement a structured approach to sponsor and promote passenger rail developments to improve Georgia's connectivity. Grant-based funding would help keep the project's integrity unless the government passes a bill adhering to the specific existing plan without compromising the selected corridor and populations served. With this need came a solution, the 2020 transportation funding bill allocated one billion dollars for surface transportation infrastructure such as passenger rail projects. The bill also includes an amended section of the Railroad Revitalization and Regulatory Reform Act of 1976 designating no less than 30 percent of the specific grants for investments can go towards rural transportation modes with a minimum grant size of one million dollars. "The Better Utilizing Investments to Leverage Development (BUILD) transportation grants that are for planning and capital investments in surface transportation infrastructure and are to be awarded on a competitive basis for projects that will have a significant local or regional impact" (DOT, 2020). DOT intends to award 50 percent of BUILD grants to projects affecting rural areas. This transportation funding grant is an incredible opportunity to gain initial funding for the infrastructure and emphasize projects in rural areas. A route proposed to solve rural Georgian's lack of transportation has a large chance of receiving a BUILD or similar grant.

State Role

Given the project's high-cost for development, Georgia must efficiently use existing agencies to plan and support the studies needed to garner updated data to determine the passenger rail route's environmental impacts and feasibility. While previous studies have been

conducted on similar corridors, none have been directly centered on the proposed corridor. Before attempting to obtain funding for construction, the federal government and private entities must see the supporting data on the project's state economic growth. The proposed route's infrastructure development cost is much less than a route needing right-of-way acquisition and complete track construction because of Norfolk Southern's existing track. The route's success depends on its ability to share the track with freight traffic. For this response to happen, negotiations with the freight company must successfully take place. Overcoming this obstacle will require dedication and commitment from the funding partners and public agencies to use political support to argue its position. High-level legislators or government officials are invaluable in facilitating agreements and securing public and private support. Because the state has limited financial resources and funding for rail projects, unlike the federal government, it cannot accumulate large deficits in funding the project; there must be a plan in place to gain public support and incentivize private capital investors.

The public and political support of Georgians is essential to the success of funding acquisition. A central issue cited during the initial stages of the Texas Central rail line was public education. Many Georgians may not consider passenger rail as a solution to the issues of urban traffic congestion and rural inaccessibility. Education of the proposed route, technology, and elaboration on the issue and possible effects is critical. There must be an expression of the urgent need for rural accessible public transportation. Many individual rural counties and cities are currently addressing this issue amongst themselves and implementing limitedly resourced solutions that only serve their respective areas. A coalition of the collective concerns would accurately depict the massive issue in light for the state to address. Dedicating a group to work

with the political and legislative areas of government to build the project's support through the study, development, and construction phases of the project is essential.

Municipal Role

The collective concerns currently voiced by many rural counties vary in access to transit. From areas like Valdosta, with no means of public transportation for residents, to areas like Tifton supplemented by a shuttle network. Common throughout rural Georgia is the support of broader transportation services by the public and business communities. While the growing concern of lacking transportation has allowed these rural areas to receive matched funding for rural transit services by GDOT, this option is limited to shuttle on-call services. The need for a combined effort to form is highlighted by the money that now inadequately addresses the problem for most rural Georgians. A dedicated group established to survey and voice the counties' specific needs collaboratively to state officials must form. While this matter has persisted over time, the severity of it has not been successful in passing new legislation for larger-scale rural projects. The effort of the combined affected areas would serve as a more promising and more substantial platform to gain the support of legislative bodies and move forward in the passenger rail project. Beyond that, a sector of GDOT should be created and dedicated to oversee and assist in rural transit projects and funding. This secondary level of oversight focused on rural areas could also use regional mobility councils to better address local issues and promote better communication of what is needed in the areas. Considering such a large scale investment, passenger rail benefits would be for rural areas and urban areas. The effects of lacking rural transportation are seen in urban areas. Commuting congestion can be alleviated with a transportation option that reaches a large central region of the state.

Proposal Agreement

The Center for Transportation Research at The University of Texas at Austin analyzed several profitable and successful rail lines using freight tracks to determine the situations that gave root to freight companies' agreements (2004). Interviews were conducted to determine the most common elements from both parties' perspectives that initiated such a promising negotiation. Several identified areas must be fulfilled for successful negotiations between the freight company and the state- communication, clearly defined objectives, and scheduling and performance.

To better understand the impact the route can have on the state economy and connectivity, progress and informational reports are necessary to ensure all information is accurately and transparently displayed to the freight company. Consistent communication between the freight company and other stakeholders will open dialogue into the planning process. The objectives of the state must be expressed to the freight company to come to mutually beneficial terms. Regarding the corridor, several objectives serve both the freight company and the state: increased train speed, reducing travel time, improving reliability, and ensuring on-time performance. Both parties experience advantages as an effect of these objectives. The state would be able to connect large areas of Georgia through timely transportation that is lacking in rural areas. This will also reduce traffic in urban areas while unlocking larger pools of the workforce and stimulating the economy. For the freight company, higher speeds and the reduced travel time will aid in efficiency and the amount of freight able to travel in a day. The alterations to the track needed to comply with the Federal Railroad Association's passenger rail regulations would also suit the company in already required alterations.

Scheduling and performance are essential aspects when judging compatibility between freight and proposed passenger traffic. As safety is a significant concern of both parties, it is important to address collision risk between the different rail lines. Coming to an agreement about shared operation time is essential and would work well in this situation. As the most profitable North Eastern Amtrak route and several other successful passenger routes primarily cater to commuters, having the majority of passenger rail operations on the selected route to take place during commuting hours would effectively ensure both parties have their needs met without disrupting important business hours or ridership.

Challenges

Various challenges may arise when a public agency initiates the idea of track sharing with a private freight company. Georgia's rail freight system is a critical aspect of the intermodal freight transportation system, facilitating large volumes of freight movement. "In 2007, Georgia's freight railroads moved 210 million tons of freight valued at $213 billion. By 2050, it is projected that the railroads will carry more than 335 million tons of freight annually, valued at $525 billion, an increase of 60 percent by tonnage and 146 percent by value" (GDOT, 2008). Rail shipments are forecasted to grow and become increasingly important because of the port system's projected expansion and growth. With an increasing share of intermodal freight transported by rail, it is essential to fund capacity expansions to the line to ensure the freight company's current and future operations remain uncompromised.

Additionally, being primarily concerned with their existing contracts and customers, the addition of passenger rail must not compromise their operation's timeliness and quality. A recurring issue of passenger rail lines that use freight tracks is frequent delays. This issue has

been a critical error that has led to a decrease in public trust in certain passenger lines due to the inability to be on time consistently. The Amtrak routes- Capital Limited (Chicago-Washington DC) and Lakeshore Limited (Chicago- New York City/ Boston) had growing ridership until 2000 when frequent traffic delays occurred. Many Tier 1 trains have agreed to more trains than their infrastructure allows and have prioritized freight materials that generate more money (oil and coal) but are slow. Advanced scheduling and infrastructure developments are needed to the existing track to serve peak commuting times and run at higher speeds, as seen in the fastest passenger line in the western hemisphere- Amtrak Acela. Only done at certain portions of the track with almost all straight lengths, the Acela train is able to run at the highest speeds. The proposed Atlanta-Macon-Savannah corridor has many opportune areas of straight passage that would draw ridership for the route and raise the freight company's capacity and timing for current and future operations.

Conclusion

Throughout history, American passenger rail has again reminded the country why it was once such a successful mode of transportation. The ability to connect areas to jobs, education, and healthcare while decreasing traffic and enhancing community access is invaluable to Georgia’s rural areas. Plagued with underfunded and underserved transportation options, rural Georgians need a collective effort for the passenger route to assist in the connectivity to urban areas. Utilizing the research conducted on funding options, passenger/freight track sharing agreements, and the prospective roles for the federal, state, and municipal level governments, significant measures should occur.

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